

# MicroBooNE Update

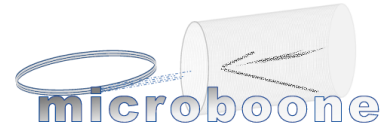
All Experimenters' Meeting

Dec. 9, 2013

Bryce Littlejohn

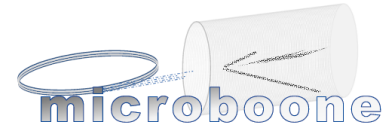
# Outline

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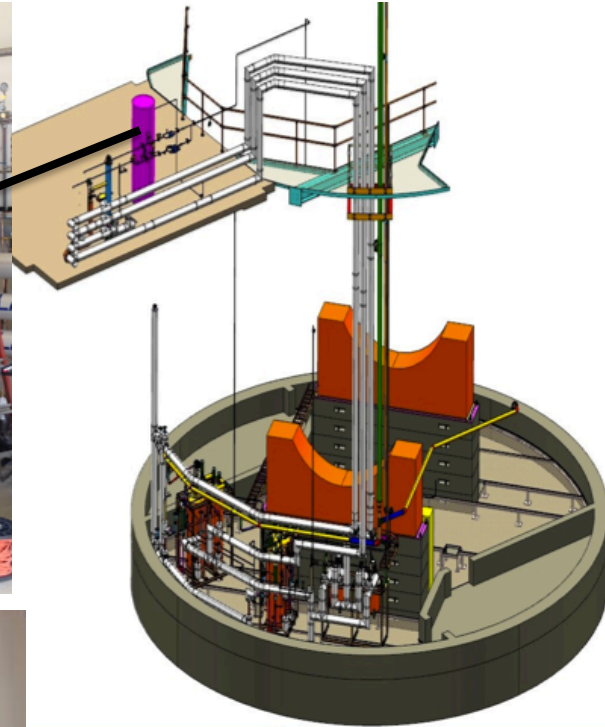
- ❑ Activities at LArTF: Cryo system commissioning
- ❑ Detector subsystems:
  - TPC
  - PMT
  - Electronics Racks

# LArTF Activities



## ❑ Cryogenics system:

- Cryo piping fully installed, foamed, and insulated
- Pressure tests completed
- Purging with gaseous Argon is underway
- Later this month: recirculate LAr, LN
- January: begin LAr purification with installed filters

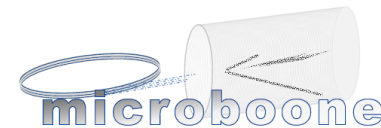


## ❑ LAr HV tests:

- Test dewar is installed
- Fill with D0 argon next week and test feedthrough
- Fill with purified LAr in January
- Apply HV in pure-LAr at various feedthrough-ground distances, purities, voltages, etc.



# TPC Subsystem



- ❑ Structure complete; all wires installed, tensioned, and measured
  - Tension measurement device designed/built by PSL (UW-Madison)
    - • Developed for LBNE Anode Plane Assemblies (APAs)
  - All wires well within tolerance
- ❑ Electronics, cold cables, tray installed, tested
- ❑ Upcoming:
  - Few remaining parts must be installed on TPC
  - Clean and prepare tent/TPC/cryostat for push-in
  - Push TPC into cryostat next week!



Install: field cage resistor chain

Install: field cage tube sections



## Wire Tension



Percent difference of measured vs. designed tension

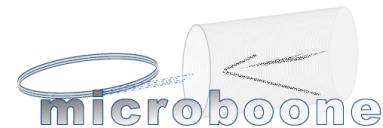


1.5 kg Largest  
Allowed Deviation:  
Safety factor of 3 at  
all temperatures

1.02 kg Largest  
Observed Deviation



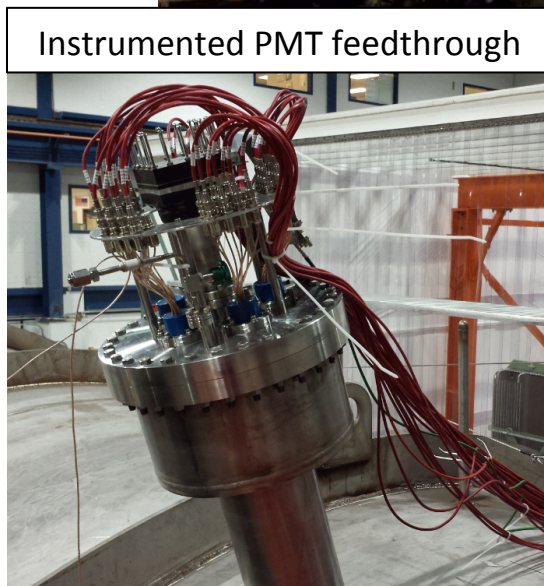
# PMT Subsystem



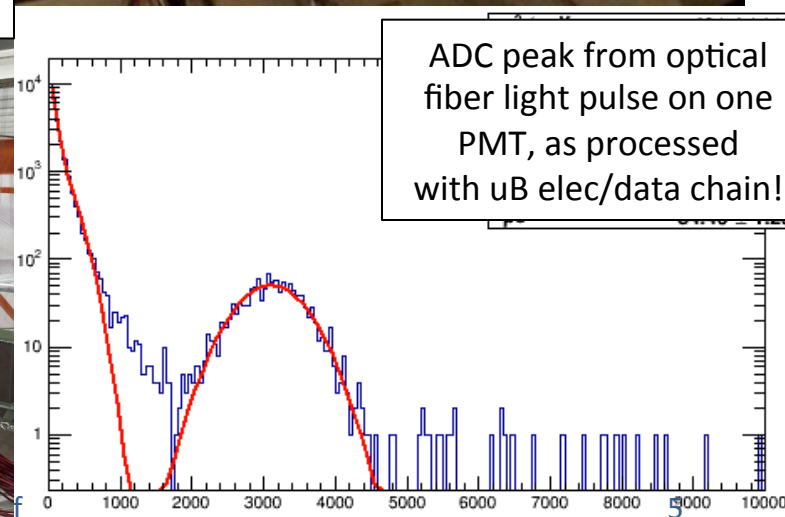
- ❑ First subsystem to be installed in cryostat
- ❑ Cables, optical fibers run inside and outside detector
- ❑ Successful simultaneous readout of optical fiber light pulses on all PMTs
- ❑ Complete data processing with entire electronics/DAQ chain



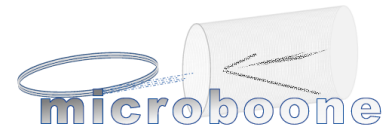
All rack sections & PMTs



Instrumented PMT feedthrough



# Subsystem Electronics Racks



- ❑ Nearly all rack infrastructure components constructed: Smoke detection, AC distribution, fans, temperature monitoring, slow controls, and grounding
- ❑ Computer room at LArTF:
  - Network, DAQ server racks installed and networked
  - CD has tested, installed necessary systems on all DAQ machines
- ❑ Remaining Racks at DAB: Most racks nearly complete
  - All will be installed on platform above cryostat
  - 5 TPC readout racks
  - 1 PMT/Trigger rack
  - 1 cryogenics Purity Monitor rack
  - 1 High Voltage rack
  - 2 Laser calibration racks
- ❑ Remaining to construct:
  - Second Purity Monitor rack
  - Power supply rack



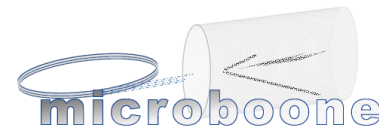
LarTF computer room: machines humming!

Wired TPC backplanes



# Summary

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- ❑ Lots of parallel progress on detector subsystems
- ❑ Currently commissioning many detector subsystems:  
Cryogenics, PMTs, TPC Electronics, Trigger, DAQ
- ❑ Preparing for TPC installation in cryostat this month
- ❑ Move closed-up cryostat this winter to LArTF